

**PATENT APPLICATION**  
**CYMER Docket No. 2003-0025-02**

**CONTROL SYSTEM FOR A TWO CHAMBER GAS DISCHARGE LASER**

The present invention claims priority to U.S. application Serial No. 60/454,029 filed March 11, 2003 and claims priority to U.S. application Serial No. 10/384,967 filed March 8, 2003; which is a continuation-in-part of Serial No. 10/210,761<sup>U.S. pat # 6,690,704</sup> filed July 31, 2002, Serial No. 10/187,336<sup>U.S. pat # 6,693,939</sup> filed June 28, 2002, of Serial No. 10/141,216<sup>U.S. pat # 6,821,674</sup> filed May 7, 2002, of Serial No. 10/036,676<sup>U.S. pat # 6,805,210</sup> filed December 21, 2001, Serial No. 10/036,727<sup>U.S. pat # 6,835,531</sup> filed December 21, 2001, Serial No. 10/006,913<sup>U.S. pat # 6,751,474</sup> filed November 29, 2001, Serial No. 10/000,991<sup>U.S. pat # 6,567,450</sup> filed November 14, 2001, Serial No. 09/943,343<sup>U.S. pat # 6,549,551</sup> filed August 29, 2001, Serial No. 09/854,097<sup>U.S. pat # 6,757,316</sup> filed May 11, 2001, Serial No. 09/848,043<sup>U.S. pat # 6,549,551</sup> filed May 3, 2001, and 09/829,475<sup>U.S. pat # 6,765,948</sup> filed April 9, 2001, all of which are incorporated herein by reference. This invention relates to lithography light sources for integrate circuit manufacture and especially to gas discharge laser lithography light sources for integrated circuit manufacture.

**BACKGROUND OF THE INVENTION**

**Electric Discharge Gas Lasers**

Electric discharge gas lasers are well known and have been available since soon after lasers were invented in the 1960s. A high voltage discharge between two electrodes excites a laser gas to produce a gaseous gain medium. A resonance cavity containing the gain medium permits stimulated amplification of light which is then extracted from the cavity in the form of a laser beam. Many of these electric discharge gas lasers are operated in a pulse mode.

**Excimer Lasers**

Excimer lasers are a particular type of electric discharge gas laser and they have been known since the mid 1970s. A description of an excimer laser, useful for integrated circuit lithography, is described in U.S. Patent No. 5,023,884 issued June 11, 1991 entitled "Compact Excimer Laser." This patent has been assigned to Applicants' employer, and the patent is hereby incorporated herein by reference. The excimer laser described in Patent '884 is a high repetition rate pulse laser.